

- Claims 10-20 are pending in this Application.
- Claims 10-20 are rejected.

### SYNOPSIS

In the outstanding Office Action, all of the claims under examination are rejected over Jejelowo, U.S. Patent No. 5,359,015. This Action relies on an inherency-based argument to reject these claims. In it, the Examiner asserts that the catalyst, polymerization method, monomer, and comonomer are substantially similar between the outstanding application and Jejelowo's example 4. From this assertion, the Examiner concludes that Applicants' polymers inherently would be expected to have properties very similar to those of Jejelowo.

The inherency standard set out in the MPEP requires an Examiner to provide a reasonable explanation that "... make[s] clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill." MPEP § 2112. One major difference between Applicants' catalysts, as claimed, and those of Jejelowo, as disclosed, lies in the bridging between the cyclopentadienyl ligands of each. Namely, Applicants require a bridged species, while Jejelowo discloses an unbridged species. One of ordinary skill in the art does not expect bridged ancillary ligand systems to behave similarly to unbridged ancillary ligand systems. In view of this knowledge, to make out an inherency case sufficient to shift onto Applicants the burden of showing unobvious differences between the prior art polymers and Applicants' polymers, the Examiner must provide facts that make clear this substantial similarity. Mere Examiner argument is not enough.

Applicants have pointed out this difference previously. At this time, the Examiner mistakenly assumed that Applicants were arguing the criticality of a bridged species. In fact, until the Examiner provides facts to meet the MPEP's

high inherency or obviousness based on inherency standard, Applicants are under no duty to show the unobviousness of a result.

But in order to assist the Examiner and narrow the issues for appeal, Applicants have provided data in appendix B showing that unbridged species similar to those disclosed in their application behave far differently than the bridged species disclosed in the their application.

The remainder of this response is organized following the organization of the outstanding final rejection. The paragraph numbers correspond to those of the outstanding action.

**Paragraph 1.**

No response necessary.

**Paragraph 2.**

No response necessary.

**Paragraph 3.**

No response necessary.

**Paragraph 4.**

The dependencies of claims 10-14 have been amended to reflect a dependency on claim 19 instead of claim 9.

**Paragraph 5.**

No response necessary.

**Paragraph 6.**

No response necessary.

**Paragraph 7.**

Claims 10-20 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Jejelowo (US 5,359,015).

The Office action asserts that substantial catalyst similarities between the instant invention and Jejelowo causes the Examiner to believe reasonably that Jejelowo's polymer inherently possesses the same additional limitations that the instant invention measures and discloses. Thus, the outstanding 35 U.S.C. §102(b) and 35 U.S.C. §103(a) rejections stand or fall together based on the reasonableness of comparing the current application's catalysts with those disclosed by Jejelowo. Applicants' catalysts are not even superficially similar to Jejelowo.

Applicant's broadest claim is claim 19. It is set out below with emphasis added. Note that the underlined limitation, requiring a bridged catalyst, is not found in any of the Jejelowo catalysts pointed out by the Examiner.

--19. A polymer produced using a process comprising providing a bridged metallocene catalyst wherein the polymer has

- (a) an MIR  $\leq$  35 and
- (b) a CDBI  $\geq$  60.--

Applicants' claims are limited to catalysts in which the cyclopentadienyl ligands are bridged. Jejelowo's catalysts lack this feature. It is well known to those of ordinary skill in the art that moving from unbridged, cyclopentadienyl, ancillary ligand systems to bridged ancillary ligand systems result in marked differences between the polymers. (See also Appendix B). In the instant invention, bridging the cyclopentadienyl ligands greatly changes the catalysts' geometry. When the outstanding office action compares bridged ancillary ligand systems to unbridged ancillary ligand systems, it ignores these geometry-related changes and their effects on the resulting polymer; it overgeneralizes. One of ordinary skill in the art would not reasonably expect bridged ligand systems to produce polymers substantially similar to unbridged ligand systems. Thus, while process limitations in product-by-process claims do not distinguish over prior art compositions, in this case the process limitation destroys lack of novelty based on inherency.

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. " MPEP §2112 (quoting *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Federal Circuit 1999)). The difference in catalyst geometry, as understood by one of ordinary skill in the art, makes it unlikely that Jejelowo produces the same polymer as claimed by Applicants.

Because Jejelowo's catalysts are not substantially similar to Applicants' catalysts, an inherency-based rejection is not proper. Please withdraw the 35 U.S.C. §102(b) rejection. Please withdraw the 35 U.S.C. §103(a) rejection to the extent it is based on inherency.

The remainder of the 35 U.S.C. §103(a) rejection is based on Jejelowo's disclosure combined with the knowledge of one of ordinary skill in the art. Specifically, the office action states that it would have been obvious to one of ordinary skill in the art to make homopolymers or copolymers having the instantly claimed properties. The only evidence offered in support of this conjecture is that "Jejelowo generically embraces the claimed ethylene homopolymers and copolymers." The office action then argues that a person of ordinary skill in the art would expect all the embodiments of the reference to work. That argument fails to establish *prima facie* obviousness. Expecting an embodiment to work is not motivation to work the embodiment.

The office action fails to explain how the knowledge of one of ordinary skill in the art combined with the disclosure of Jejelowo would lead skilled artisans to modify Jejelowo's polymers to come to Applicants' polymers. Even if general knowledge taught the desirability of having polymers with Applicants specifically claimed parameters, neither general knowledge nor Jejelowo teaches how to get there from Jejelowo.

Taken as a whole, Jejelowo teaches catalysts in which at least one cyclopentadienyl ligand is substituted with a hydrocarbyl group through a secondary or tertiary carbon. Examination of Jejelowo's disclosure clearly shows that n-propyl substitutions are not within the definition of secondary or tertiary. (See Jejelowo, Col. 7, lines 40-49). Moreover, substitutions that transform the cyclopentadienide ion radical into the fluorenyl radical also do not meet Jejelowo's requirements for a hydrocarbyl group. (See column 6, lines 20-50, which specifies that if the cyclopentadienyl substitutions transform Cp into fluorenyl, that the fluorenyl group will have an additional substituent).

Since Jejelowo is concerned with different catalytic effects, it is unlikely that it teaches the substitution pattern disclosed by Applicants. Since Jejelowo is interested in achieving an effect caused by a mixed-catalyst-like system, it is

unlikely that it teaches Applicants' parameter ranges. The Examiner is invited to provide evidence of or explain the motivation of one of ordinary skill in the art to move from Jejelowo's polymers to Applicants'.

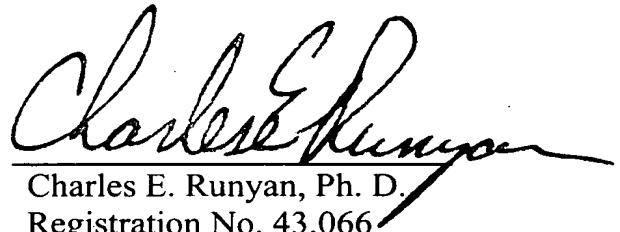
Since a *prima facie* case of obviousness has not been made out, Applicants ask that this 35 U.S.C. §103(a) rejection be removed.

As alluded to earlier, in the outstanding Office action the Examiner treats applicant's argument regarding bridged versus unbridged ancillary ligand systems as a criticality argument made to demonstrate unobviousness. As stated above, Applicants are under no duty to show unobviousness until the Examiner presents evidence or reasoning to show inherency. But to progress examination of this application and to narrow the grounds for appeal, Applicants provide appendix B in which the melt strengths of several unbridged-ancillary-ligand-system catalysts are shown. (In Appendix B, MI is melt index, MIR is melt index ratio, and MS is melt strength. As can be seen from this data, most unbridged systems similar to those disclosed in Applicants' specification have melt strengths less than 6. On the other hand, examination of table 4, example 14, shows a melt strength of greater than 25 for a bridged example. This shows a large difference between the behavior of bridged and unbridged species. Thus, while the melt strengths of Jejelowo polymers would be expected to be similar to those of the unbridged species shown in appendix B, Applicants' polymers are neither similar to the Appendix B unbridged species nor expected to be similar to Jejelowo's unbridged species. Therefore, it is unlikely that Jejelowo's polymers have parameters similar to Applicants.

Applicants intend this action to fully address the outstanding issues or to narrow those issues for appeal. Please enter this response. Since all claims are now in condition for allowance, please issue a Notice of Allowability so stating.

If you believe I can be of any further help, please contact me using the information below.

Respectfully submitted,

  
Charles E. Runyan, Ph. D.  
Registration No. 43,066

12/13/01  
Date

ExxonMobil Chemical Company  
Law Technology  
P.O. Box 2149  
Baytown, Texas 77522-2149  
(281) 834-2657 Voice  
(281) 834-2495 Facsimile  
[charles.e.runyan@exxonmobil.com](mailto:charles.e.runyan@exxonmobil.com)

**APPENDIX A****MARKED-UP CLAIMS****CLAIMS**

6 19

10. (Amended once) The homopolymer or copolymer of claim 9 wherein the melt strength is  $\geq 0.0-6.0 \times \log(\text{MI})$ .

Twice 19

11. (Amended once) The polymer of claim 9 where the MI is 0.3 to 1.2.

Twice 19

12. (Amended once) The polymer of claim 9 where the MIR is  $\leq$  than 25.

Twice 19

13. (Amended once) The polymer of claim 9 consisting of ethylene.

Twice 19

14. (Amended once) The polymer of claim 9 comprising ethylene and one or more C<sub>3</sub>-C<sub>8</sub>  $\alpha$ -olefin.

15. The polymer of claim 11 consisting of ethylene.

16. The polymer of claim 11 comprising ethylene and one or more C<sub>3</sub>-C<sub>8</sub>  $\alpha$ -olefin.

17. The polymer of claim 12 consisting of ethylene.

18. The polymer of claim 12 comprising ethylene and one or more C<sub>3</sub>-C<sub>8</sub>  $\alpha$ -olefin.

19. A polymer produced using a process comprising providing a bridged metallocene catalyst wherein the polymer has

(a) an MIR  $\leq$  35 and

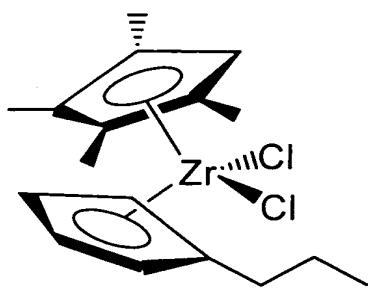
(b) a CDBI  $\geq$  60.

20. The polymer of claim 19 wherein having a melt strength  $\geq$  8.0 - 6.0 x log(MI).

**APPENDIX B**

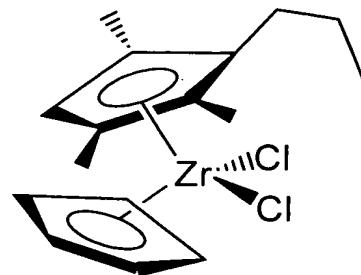
**MELT STRENGTHS OF UNBRIDGED METALLOCENE**

**POLYMERIZATION CATALYSTS**

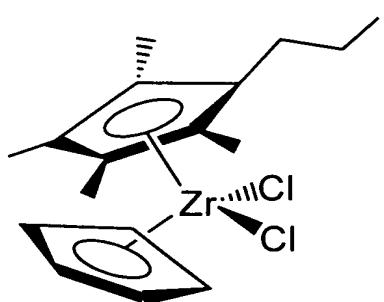


Example 11 in patent

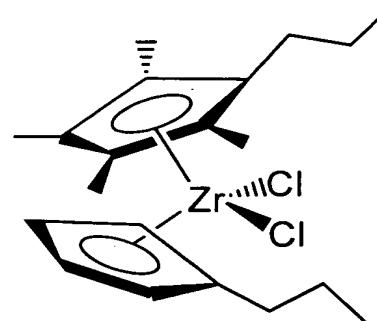
MI = 1.0  
MIR = 17.3  
MS = 5.2



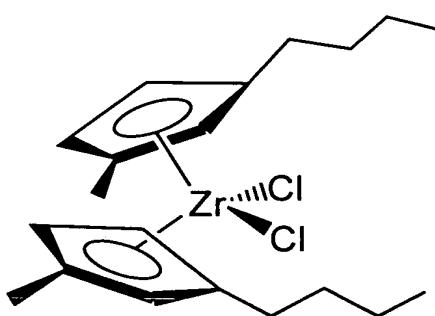
MI = 1.2  
MIR = 16.6  
MS = 3.5



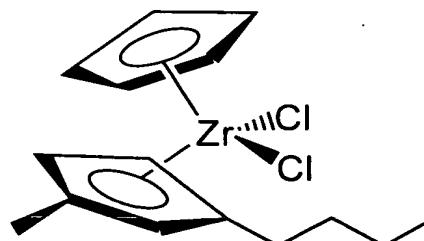
MI = 1.3  
MIR = 16.8  
MS = 4.1



MI = 1.8  
MIR = 17.6  
MS = 3.3



MI = 1.4  
MIR = 16.5  
MS = 4.7



MI = 1.1  
MIR = 16.7  
MS = 6.5